

**TECHNICAL SUPPORT DOCUMENT  
FOR PREVENTION OF SIGNIFICANT DETERIORATION  
Chehalis Generation Facility  
NO. EFSEC/95-02-Amendment 2  
Chehalis Washington  
April 10, 2006**

**1. EXECUTIVE SUMMARY**

The Chehalis Generation Facility (CGF) has requested changes to its existing permit EFSEC/95-02 Amendment 1. The requested changes would affect the way opacity is routinely monitored, and also make changes to the startup and shutdown provisions in its current permit. No changes in emission limits or averaging times are requested, and no physical changes to the existing facility are proposed.

CGF has requested changes in the method and schedule used to routinely monitor the opacity of gasses leaving the two turbine exhaust stacks. Two years of operating experience has shown that when burning natural gas, the stack gasses are very clear and have never approached the permitted 10% opacity limit. Use of EPA Method 22 on a trial basis for routine opacity monitoring has shown to be successful. CGF has requested use of Method 22 on schedule less often than the daily observations required by the current permit. If Method 22 ever indicates an opacity problem, the opacity will be determined by EPA Method 9. The cause of the problem will be corrected and opacity re-measured by EPA's Method 9 to confirm compliance.

When starting up after the plant has been shut down for more than 72 hours (called a "cold start"), CGF has requested that the time allowed for the startup period be lengthened from 3 to 5 hours. The need for this lengthened startup time limit was found to be primarily caused by process equipment design changes made when the plant's cooling system design was changed from water cooling to air cooling late in the permitting process. This effect of the cooling process design change was not anticipated back then, but was discovered after operating the plant.

EFSEC agrees that the requested changes are appropriate. Changes in Conditions 8 and 10 in the existing permit are proposed for opacity and startup/shutdown respectively. EFSEC also proposes removal of all permit terms referencing the two boilers that were originally planned and permitted, but were not installed. The format of the permit's Approval Conditions is also proposed to be changed into a numbered outline format with a single requirement or subject in each item.

No changes to permitted pollutant emission limits are proposed by this amendment.

## **2. INTRODUCTION**

### **2.1. The Permitting Process**

#### **2.1.1. The Prevention of Significant Deterioration Process**

The Prevention of Significant Deterioration (PSD) procedure is established in Title 40, Code of Federal Regulations (CFR), Part 52.21. Federal rules require PSD review of all new or modified air pollution sources that meet certain criteria. The objective of the PSD program is to prevent serious adverse environmental impact from emissions into the atmosphere by a proposed new source. The program limits degradation of air quality to that which is not considered "significant." It also sets up a mechanism for evaluating the effect that the proposed emissions might have on environmentally related areas for such parameters as visibility, soils, and vegetation. PSD rules also require the utilization of the most effective air pollution control equipment and procedures, after considering environmental, economic, and energy factors.

The Washington State Energy Facility Site Evaluation Council (EFSEC) is the PSD permitting authority for new thermal energy facilities with a net electrical output greater 350 Megawatts (MW), sited in the state of Washington, per Chapter 80.50 of the Revised Code of Washington (RCW) and Chapter 463-78 of the Washington Administrative Code (WAC).

#### **2.1.2. The Notice of Construction Process**

The procedure for issuing a Notice of Construction (NOC) permit is established in Chapter 70.94 Revised Code of Washington. Chapter 173-400 WAC and Chapter 173-460 WAC, require all new or modified stationary sources of air pollution to file a NOC application and receive an order of approval, prior to establishing a new or modified stationary source.

WAC 173-400-110 (new source review) outlines the procedures for permitting criteria pollutants. These procedures are further refined in WAC 173-400-113 (requirements for new sources on attainment or unclassifiable areas).

WAC 173-460-040 (new source review) supplements the requirements contained in Chapter 173-400 WAC by adding additional requirements for sources of toxic air pollutants.

EFSEC is the NOC permitting authority for energy facilities greater than 350 MW sited in the State of Washington as defined in Chapter 463-78 WAC, and Chapter 80.50 RCW.

### **2.2. The Project**

Chehalis Power Generating Limited Partnership (CP) operates the Chehalis Generation Facility (CGF) near Chehalis, Washington. The facility consists of two 175 MW natural gas and oil-fired combustion gas turbines. Each has its own heat recovery steam generator (HRSG). There is a single steam turbine generator.

This amendment proposes no physical changes to the existing facility or changes to permitted pollutant emission levels or averaging times. It proposes to change the frequency and method used to routinely monitor opacity, and to allow a longer maximum time limit for turbine startup when the turbine has been down for more than 72 hours.

#### **Opacity routine monitoring changes requested by CGF**

CGF requests a change in Condition 8 of its combined Notice of Construction approval order and Prevention of Significant Deterioration approval (No. EFSEC/95-02 Amendment 1, Notice of Construction and Prevention of Significant Deterioration Final Approval). This condition governs compliance and routine monitoring of combustion turbine exhaust gas opacity.

Condition 8 states that “Opacity from each exhaust stack of the project shall not exceed 10 percent over a six minute average as measured by EPA Reference Method 9, or an equivalent method approved in advance by EFSEC. A certified opacity reader shall read and record the opacity if Method 9 is used.”

As an alternative, Chehalis Power requests EFSEC approval to conduct monthly opacity monitoring when the facility uses natural gas, and daily monitoring when fuel oil is combusted. Use of Method 22 for routine opacity monitoring is requested.

#### **Startup/Shutdown time period changes requested by CGF:**

CGF requests a change in Condition 10 of its combined Notice of Construction approval order and Prevention of Significant Deterioration approval (No. EFSEC/95-02 Amendment 1, Notice of Construction and Prevention of Significant Deterioration Final Approval). This condition governs startups and shutdowns of the combustion turbines.

The current startup and shutdown provisions in Condition 10 limit such periods to 3 hours per occurrence, with a maximum of two startups per 24 hour period, and 200 startups per year, per turbine. The condition also imposes emission limits on carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>) that apply during startup and shutdown periods. CGF is not requesting any changes to these existing emission limits, nor to the limits on number of startups per year or per 24 hours.

CGF is requesting changes to the 3 hour startup duration limit, seeking new duration limits that are appropriate to startup type. Specifically, CGF is requesting a 5 hour startup period for cold starts while retaining a 3-hour startup period for warm and hot starts. In addition, CGF is requesting clarifications to the current condition language.

### **2.3. New Source Performance Standards**

Since no hourly emission increases are proposed, no additional review of New Source Performance Standards (NSPS) requirements are triggered by this proposed permit amendment.

### **2.4. The PSD Application**

Chehalis Power Generating, L.P (Chehalis Power) submitted a letter to EFSEC dated November 16, 2004 requesting the alternative opacity monitoring approach. They submitted a second letter to EFSEC dated February 18, 2005 requesting changes to the

startup and shutdown provisions. EFSEC and Chehalis Power agreed to combine these letters as a modification to the current permit No. EFSEC/95-02 Amendment 1.

The CGF permit is written as a combined PSD/NOC permit where the provisions of both the federal PSD regulations and the state NOC regulations are combined into one permit. Other EFSEC permits have separated those NOC and PSD permit provisions into two separate permit documents.

## 2.5. PSD Applicability

The original permitting process established that the CGF was in one of 28 industrial categories that become PSD applicable when potential emissions of one regulated pollutant are greater than 100 tons per year. Nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), particulate matter smaller than 10 microns (PM<sub>10</sub>), volatile organic compounds (VOCs), and sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>) were shown to be PSD applicable pollutants. Amendment 2 does not add or delete any PSD applicable pollutants.

## 2.6. Emissions And Emission Control

No changes in hourly or permitted annual emissions are anticipated from this amendment request. Since by definition the turbines would have been out of operation for at least 72 hours before a cold start, Table 1 shows that the period with no emissions compensates somewhat or completely for the excess emissions created during restarting the plant.

**Table 1: Potential Emissions: Normal Operation and Startup (per turbine)**

ITEM	NO <sub>x</sub>		CO	
	Gas	Oil	Gas	Oil
Fuel burned				
Normal operation permit limits	491 lb/day =20.45 lb/hr 120.5 ton/year	2,538 lb/day =105.75 lb/hr	7.7 lb/hr	24.4 lb/hr
72 hr of normal emissions	1,473 lbs	7,614 lbs	554 lbs	1,756 lb
Potential startup emissions (as originally permitted and unchanged by this amendment)	292 lb/hr	407 lb/hr	263 lb/hr	417 lb/hr
Potential emissions for 3 hr cold startup	876 lbs	1,221 lbs	789 lbs	1,251 lbs
Potential emissions for 5 hr cold startup	1,460 lbs	2,035 lbs	1,315lbs	2,085 lbs
(3 hr startup) – (72 hr normal operation) =	(597 lbs)	(6,393 lbs)	235 lbs	(505 lbs)
(5 hr startup) – (72 hr normal operation) =	(13 lbs)	(5,579 lbs)	761 lbs	329 lbs

Table 1 shows that allowable NO<sub>x</sub> emissions during each 5 hour startup period are totally compensated (parentheses indicates less potential emissions during startup than would be emitted at normal operating conditions) when the turbine is shut down for 3 or more days.

Allowable CO emissions from a cold start are partially compensated for on an annual and short term bases. A discussion of the impact of these additional CO emissions is in the Ambient Air Quality Analysis, Section 4.

### **3. DETERMINATION OF BEST AVAILABLE CONTROL TECHNOLOGY**

#### **3.1. Definition and Policy Concerning BACT:**

All new sources are required to utilize Best Available Control Technology (BACT). BACT is defined as an emissions limitation based on the maximum degree of reduction for each pollutant subject to regulation, emitted from any proposed major stationary source or major modification, on a case-by-case basis, taking into account cost effectiveness, economic, energy, environmental and other impacts (40 CFR 52.21(b)(12)).

The "top down" BACT process starts by considering the most stringent form of emissions reduction technology possible, then determines if that technology is technically feasible and economically justifiable. If the technology is proven infeasible or unjustifiable, then the next less stringent level of reduction is considered. When an emission reduction technology meets the stringency, and technical and economical feasibility criteria, it is determined to be BACT.

#### **3.2. BACT During Normal Operations**

Previous permitting for the CGF established BACT for NO<sub>x</sub>, CO, sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub>), volatile organic carbon (VOC), sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), and ammonia (NH<sub>3</sub>). Since this amendment does not request an increase in any hourly or permitted annual emissions, it does not trigger re-opening of these BACT analyses.

#### **3.3. BACT For Startup and Shutdown**

A key requirement of any BACT for startups and shutdowns is to follow the startup and shutdown procedures that are developed by the equipment manufacturers. These procedures are documented in the equipment Start-up, Shutdown, and Malfunction Procedures portion of the CGF equipment manuals. Startups and shutdowns must be very carefully controlled procedures so that the combustion turbine, HRSG, and steam turbine are not damaged.

##### **Reason for Startup/Shutdown Revision Request**

Now that CGF has operated for more than two years, CGF has learned through operational experience that the startup time required to bring the combustion turbines up to normal operation varies depending on how long the steam turbine and the heat recovery steam generators (HRSG's) have been shut down. In particular, meeting normal operation emission limits 3 hours after beginning a cold start has forced the plant to operate the steam turbine in a manner that exceeds the manufacturer's specifications for the unit.

The steam turbine manufacturer, Alstom, specifies a maximum steam temperature of 800°F for cold starts to ensure that the temperature differential between the steam and the steel in the turbine is not too great. In a startup consistent with manufacturer's recommended procedures, CGF would operate the combustion turbine at very low loads until the steam turbine is ready. The exhaust flow would initially provide 800°F steam to the steam turbine for about one hour, then would slowly increase in temperature, raising

the steam temperature. Following the Alstom recommendations would result in the fastest startup without putting undue stress on the steam turbine. Ideally, the combustion turbine needs to be lightly loaded for up to 4 hours on a cold start. If there is an equipment malfunction, even more time is required. During this period of up to 5 hours, the combustion turbine would be in startup mode with respect to emissions.

CGF currently operates the combustion turbines during startup so as to comply with Condition 10 of the permit, rather than operating in accordance with the steam turbine manufacturer's recommended startup procedures. It now typically takes 2 to 2-1/2 hours to establish steam pressure, then to establish a vacuum in the condenser, and finally to begin rolling the steam turbine. This leaves insufficient time to keep the combustion turbine loaded lightly and to supply 800°F steam for the period required by Alstom. The time it takes to establish pressure and vacuum leaves only enough time to raise the combustion turbine load in a manner that allows compliance with the 3 hour startup limit in Condition 10. Raising the combustion turbine load in this manner causes the steam temperature to rise to about 900°F. This higher temperature impedes a smooth, reliable startup of the steam turbine for two reasons. First, the rising steam temperature causes heat stress in the turbine, and second, the actual temperature of 900°F is well above the 800°F specified by Alstom.

Meeting the 3-hour startup period forces the plant to put excess heat stress on the steam turbine. The turbine is protected by a "stress calculator" safety system that limits the stress and halts the startup if the stress exceeds a set-point. The calculator limits stress by slowing the startup process. It may also trip the turbine if stresses are too high. In effect, the changing, higher temperature steam constantly challenges this safety feature and requires the operators to start the turbine very slowly to avoid high stresses that will trip the turbine. The drawback of a slow start is that the fuel efficiency (heat rate) during the startup is higher than it need be. Poor fuel efficiency during startup results when the steam largely by-passes the steam turbine as it ramps up.

CGF is seeking this revision to avoid challenging the turbine safety system (i.e., stress calculator), to improve the reliability and timeliness of the steam turbine start, and to improve the plant heat rate during the startup. An additional benefit of this change would be to reduce the duration of plant noise from by-passing the steam turbine as it warms up.

Allowing up to 5 hours for cold starts would give the plant sufficient time to take a "temperature matching" approach to startup. Operational experience has shown that such an approach is appropriate given the equipment at the facility. Under the temperature matching approach, Chehalis Power would be able to provide 800°F steam to the steam turbine – meeting the manufacturer's temperature specification – while bringing the combustion turbines online in a manner that best suits the equipment.

Finally, the requested revision is also based on the fact that the air cooled condenser was not part of the CGF design when the permit startup limits were drafted. Relatively late in the approval process the project proponent changed the plant design from wet to air cooling to address concerns about water consumption. In order for the air cooled condenser to work effectively, CGF must first establish a vacuum in it. This takes about an hour, which lengthens the startup period beyond that required for projects with more

conventional wet cooling towers. Thus, it may have been possible for projects at Satsop and Wallula to operate successfully with 4-hour cold start limits, but the air cooled condenser in place at CGF requires additional time during startup.

#### **Startup and Shutdown BACT Decision:**

Startups periods will begin when fuel is supplied to the turbines, and will end when one of two events occurs: either the turbine(s) are operating above 60% load and normal operating temperatures have been reached in both the catalytic oxidation and selective catalytic reduction modules, or else three (3) or five (5) hours have elapsed since fuel was first introduced to the turbines on a hot/warm, or cold start respectively. Normal operating limits for NO<sub>x</sub>, and CO are relieved while in startup or shutdown mode, but are measured and counted toward annual emissions.

The hourly NO<sub>x</sub> and CO limits originally permitted are kept the same. NO<sub>x</sub> limits are 132 kilograms (292 pounds) per hour when burning gas, or 185 kilograms (407 pounds) per hour when burning oil, averaged over the occurrence. CO limits are 120 kilograms (263 pounds) per hour when burning gas, or 190 kilograms (417 pounds) per hour when burning oil, averaged over the occurrence.

Shutdowns are usually shorter than startups. Shutdowns are limited to three (3) hours per occurrence, but normally take less time. Shutdowns begin when the CT is initially ramped down from normal operation with the intent of shutting the unit down.

Shutdowns end when fuel feed to the CT ceases.

### **3.4. Opacity**

Opacity is regulated under the NOC process as described in Section 2.1.2. Both federal PSD and state NOC requirements for CGF were placed into one PSD permit for this facility. Later EFSEC permits have separated these requirements into two separate documents. Since no changes have been requested for either the currently permitted opacity limit (10%) or the method of determining compliance (EPA Reference Method 9), those issues are not open for review.

The changes that have been requested are in the way that opacity is routinely monitored. CGF previously requested and EFSEC approved use of Method 22 to routinely monitor opacity on a trial basis. The monitoring schedule CGF has requested is monthly when combusting natural gas fuel, and daily when combusting oil fuel. See Section 2.2 for further details of the request.

#### **Reason for Opacity Revision Request**

CGF primarily burns natural gas, so particulate emissions levels are extremely low. Stack opacity is never expected to exceed the permitted limit of 10 percent opacity over a six minute period. Acknowledging this, EFSEC previously approved EPA Method 22 as an alternative to Method 9 for routine opacity monitoring. In more than two years of operation the facility has had no opacity exceedances.

CGF is permitted to burn fuel oil when natural gas is not available and during limited test periods. While the opacity limits are the same when burning fuel oil, and permit

exceedances are not anticipated, there is a slightly greater chance of opacity exceedances when burning fuel oil. To date, CGF has not burned fuel oil.

Condition 8 was found to be ambiguous as to whether daily opacity observations are required when Method 22 is followed to evaluate opacity. Regardless of whether Method 9 or Method 22 was followed, daily opacity monitoring was a time-consuming requirement that Chehalis Power felt excessive when natural gas was burned. As an alternative, Chehalis Power has requested EFSEC approval to conduct monthly opacity monitoring when the facility uses natural gas, and daily monitoring when fuel oil is combusted. This frequency takes into account the likelihood of opacity excursions based upon fuel characteristics.

CGF noted that their opacity monitoring change proposal was consistent with the Title V operating permit that Southwest Clean Air Agency issued for the Clark Public Utility District's River Road Generating Plant. That facility is also based on a GE Frame 7 combustion turbine and burns natural gas. The River Road Generating Plant permit requires opacity and visible emissions surveys once per month.

**Opacity routine monitoring decision:**

EFSEC agrees with CGF that routine opacity monitoring using EPA Method 22 on a trial basis has proven that it is an appropriate opacity routine monitoring method. Its use is approved on a weekly basis when combusting natural gas fuel. Routine monitoring on a weekly basis does not appear to be an undue burden on CGF, and is in EFSEC's opinion a more appropriate monitoring frequency than monthly. EFSEC agrees with CGF that when combusting oil, daily opacity monitoring using Method 22 is appropriate.

EFSEC notes that stack opacity under normal operating conditions is clear (zero opacity). If Method 22 detects observable opacity, CGF will run a Method 9 opacity test as soon as possible, but within a maximum of 2 non-holiday week days. If the turbine is shut down before this opacity reading is done, the testing will be done on the first non holiday weekday after restarting. CGF will determine the cause of the opacity increase, and include an explanation in normal reports to EFSEC when there is no violation of the 10% limit. If there is an opacity limit violation, CGF will also repair the problem, retest opacity using Method 9, and report the result as a special item in normal reports to EFSEC.

#### **4. AMBIENT AIR QUALITY ANALYSIS**

The PSD permitting program requires that an Ambient Air Quality Impacts Analysis (AQIA) be made for pollutants emitted in significant quantities. The AQIA determines if emissions of any pollutant will cause or contribute to an exceedance of a National Ambient Air Quality Standard (NAAQS). It also determines if the change in Air Quality since the applicable baseline dates is greater than the Class I and Class II PSD Increment Levels. This was done for all PSD significant regulated pollutants in the original permitting action.



**Modeling analysis required for this permitting action:**

Condition 10 imposes short-term emission limits (one hour averaging time) for NO<sub>x</sub> and CO during startup and shutdown periods, and no change is proposed for those limits. This means that the modeling of start up emissions done for the CO one hour NAAQS in the original air permit is not affected, so it does not need to be revisited. NO<sub>x</sub> has no short term average air quality standard.

As shown in Section 2.6 Emissions and Emission Control, annual emissions of NO<sub>x</sub> were not increased by allowing the startup process after a 72 hour (or longer) shutdown, even if it were allowed to be extended from 3 to 5 hours. Further analysis and modeling for compliance with the NO<sub>x</sub> standard (which is annual) is therefore not required.

For CO, the hourly emission limit during startup periods will remain unchanged, but CO emissions could increase over an 8-hour period because the revision would allow CGF to comply with the higher CO startup limits for up to 5 hours instead of the current 3 hour limit. Review of compliance with the 8-hour CO standard is warranted.

**Modeling analysis done for this permitting action:**

The original air approval application for the CGF addressed operational emissions, demonstrating that no ambient air quality standard or PSD increment would be exceeded. The technical air quality analysis in the application was handled by the Atmospheric Sciences Group of MFG, Inc., which has since left MFG and joined Geomatrix Consultants, Inc. CGF asked Geomatrix to confirm that the requested change would not result in any ambient standard or increment exceedance.

The original application identified a maximum 8-hour average CO concentration of 153 ug/m<sup>3</sup>, based on a CO emission rate of 242 lb/hr. See Application for Site Certification, May 18, 1995, Table 6.1-29. The 242 lb/hr emission rate was based on oil firing at partial (60%) load, which was the operating scenario with the highest emissions and reduced exhaust flow rate. This worst-case concentration is about one third the Significant Impact Level (SIL) of 500 ug/m<sup>3</sup> — far below the ambient air quality standard for CO of 10,000 ug/m<sup>3</sup>.

The CO emission limit for each combustion turbine during an oil-fired startup is 417 lb/hr. If this emission rate occurred for 5 continuous hours and the other 3 hours were based on oil firing at partial load, the 8-hour emissions would be 2,811 lb, or 1.45 times the 1,936 lb that would have occurred with 8 hours of 60 percent load operation with oil firing. Based only on the emission rate increase, the predicted ambient concentration would also increase 1.45 times, resulting in a maximum 8-hour average concentration of 222 ug/m<sup>3</sup>. This is still less than the SIL and only 2.2 percent of the ambient standard.

In reality, however, the exhaust gas flow rate from the combustion turbine stack varies during the startup period. It is possible that the plume rise during startup could reduce dispersion and increase ambient concentrations compared with the partial load scenario. However, the maximum concentrations on which this scaling is based resulted from partial load operation. Geomatrix is confident that the reduced exhaust flow, which only pertains

to part of the 8-hour period, would not be sufficient to result in 8-hour concentrations that could threaten compliance with the ambient air quality standard.

**Conclusion:**

EFSEC concludes that the potential additional emission of CO during the extended startup period allowed by this permit action will not cause or contribute to the exceedance of any NAAQS or PSD Increment.

## **5. ADDITIONAL IMPACT ANALYSIS**

### **5.1. Impacts on growth**

This permitting action proposes changes to the permit terms of an existing and operating facility. These changes are not anticipated to impact industrial, commercial, or residential growth in the area.

### **5.2. Impacts on soils and vegetation**

CO is the only pollutant with potential emissions increase due to this permitting action. CO is not a pollutant typically associated with impact on soils and vegetation. As shown in Section 4, maximum CO impacts for the entire CO emissions (not just the increases proposed by this permit action) are at concentrations that permitting regulations consider insignificant and do not requiring further impacts analysis. Maximum modeled CO impacts (concentrations) are about 2% of the NAAQS. This indicates that CO emissions will have no significant impacts on soils and vegetation.

### **5.3. Impacts on local visibility**

CGF has operated for more than two years now. Opacity from the turbine stacks has always been clear as noted in the Section 3.4 discussion on opacity. Startup and shutdown using natural gas fuel have not proven to have significant visibility issues either. Under certain atmospheric conditions, moisture in the hot stack gasses will condense and form a water vapor plume (sometimes called a steam plume). This is considered normal, and not a regulatory issue.

Oil has not been used as a fuel by CGF at the time of this permit amendment. The reason is that Condition 1 of the current permit allows oil fuel use for up to 30 days (720 hours) per year, but only when natural gas has been curtailed. Since natural gas has always been available, no oil has been combusted for normal power production. If oil is ever used for power production, it would be when natural gas is not available, most likely during a time of severe cold when natural gas is needed for home heating or other priority uses. Electrical power from CFG would most likely be in high demand also, so plant operation would be as continuous as possible. This implies that any shutdowns would be as short as possible and “cold starts” after more than 72 hours of down time would be few if any while using oil for fuel.

CGF has presented the request to allow the extension of the “cold start” time period as allowing the startup to be conducted more closely to the schedule approved by the

equipment manufacturers. This would indicate that combustion conditions should be at least as carefully controlled as under the current permit's startup conditions. This indicates that local visibility should be protected at least as well as it has under the original permit terms, which has been demonstrated as satisfactory.

## **6. CLASS I AREA IMPACT ANALYSIS**

PSD regulations require that the impact of a proposed facility on Federal Class I areas be analyzed. Class I Areas are areas of special national or regional value from a natural, scenic, recreational, or historic perspective. Class I areas near CGF are Mt. Rainier and Olympic National Parks, and Goat Rocks, Mount Adams, and Alpine Lakes Wilderness Areas. The Columbia River Scenic Area is not a federal Class I area, but impacts on it are usually evaluated similarly.

The special analyses required include determination of Class I Increment consumption, and determination of impacts on Air Quality Related Values (AQRVs) such as visibility and deposition. This analysis was done for the original permit action. Impacts were discussed with the National Park and Forest Service Federal Land Managers responsible for these areas at that time and were determined to be within permitting guidelines and acceptable.

NO<sub>x</sub>, particulate matter (both PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>x</sub>) and VOC are pollutants whose emissions may have impacts on Class I areas. CO is not a pollutant that is considered to have impacts on Class 1 areas, so it is not discussed further in this section. The impacts of NO<sub>x</sub> will be discussed.

### **6.1. Class I Increment**

NO<sub>x</sub> Increment consumption is determined by modeling the concentration impact of annual emissions on a Class 1 area. Since there is no increase in NO<sub>x</sub> annual emissions, there is no additional Class I Increment consumption from this proposed permit action.

### **6.2. Deposition**

NO<sub>x</sub> related deposition impacts are determined by modeling the deposition impact of annual emissions on a Class 1 Area. Since there is no increase in NO<sub>x</sub> annual emissions, there are no additional Class I deposition impacts from this proposed permit action.

### **6.3. Visibility**

Visibility guidelines consider that a modeled impact of less than 5% is acceptable. If some days during the year have modeled impacts of more than 5%, the Land Managers require consultation to minimize impacts, and the permit terms may be seriously questioned by them. If any days have visibility impacts of greater than 10%, impacts must be reduced or mitigated to allow permitting.

CGF's visibility impact on Class 1 Areas was modeled and analyzed during the facility's original permitting. It was originally found that natural gas combustion would not cause visibility impacts large enough to qualify as impairment at the initially proposed 9 ppm<sub>dv</sub> NO<sub>x</sub> emission concentration. The final permit controlled NO<sub>x</sub> at three ppm<sub>dv</sub>, which had a lower impact on visibility.

CGF began commercial operation on October 1, 2003. As of December 13, 2005, CGF has initiated 41 “cold starts.” Forty one cold starts in twenty six months represents an average of fewer than 20 “cold starts” per year. Allowing these cold startups to be done more slowly to adhere more closely to the manufacturer’s recommend startup conditions is not anticipated to increase visibility impacts of these startups in Class I Areas.

CGF is currently permitted to combust oil fuel for up to 30 days (720 hours) each year, and this is not proposed to be changed. Combustion of oil fuel is only allowed when the natural gas fuel supply has been curtailed. The original permit modeling determined that there could be some Class I area visibility impairment when combusting oil fuel, but the impairment would be acceptable to the Federal Land Managers. For the same reasons given in the discussion of local visibility impacts in Section 5.3, this permitting action is not anticipated to increase CGF’s impact on Class I visibility when conduction “cold starts” using oil for fuel.

## **7. CONCLUSION**

The changes proposed in NO. EFSEC/95-02 Amendment 2 will have no significant adverse impact on air quality. The Washington State Energy Facility Site Evaluation Council finds that the Applicant, Chehalis Power Generating Limited Partnership has satisfied all requirements for a PSD/Notice of Construction approval amendment for the Chehalis Generation Facility.

## **8. REGULATORY REQUIREMENTS**

### **8.1. Federal regulations:**

Prevention of Significant Deterioration	40 CFR 52.21
New Source Performance Standards	40 CFR 60, Subpart GG
New Source Performance Standards, Quality Assurance Procedures	40 CFR 60, Appendix F
New Source Performance Standards, Performance Specifications	40 CFR 60, Appendix B
Acid Rain Permitting	40 CFR 72
Emissions Monitoring and Permitting	40 CFR 75
NO <sub>x</sub> Requirements	40 CFR 76
Monitoring of sulfur content of natural gas	40 CFR 60.334(b)(2), 40 CFR 72.2, and 40 CFR Part 75, Appendix D

## **8.2. State regulations:**

General and Operating Permit Regulations for Air Polluting Sources	463-78 WAC
General Regulations for Air Pollution Sources (by reference)	173-400 WAC
Operating Permit Regulation (by reference)	173-401 WAC
Acid Rain Regulation (by reference)	173-406 WAC
Controls For New Sources of Toxic Air Pollutants (by reference)	173-460 WAC

## **9. ADDITIONAL INFORMATION**

For additional information about this permit amendment request, please contact:

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